THERAPEUTIC GUIDELINES
FOR HIV INFECTED AND HIV EXPOSED CHILDREN

As of February 2009
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td>3</td>
</tr>
<tr>
<td>Community physician care</td>
<td>3</td>
</tr>
<tr>
<td>Identify children at risk for HIV disease</td>
<td>4</td>
</tr>
<tr>
<td>Diagnosis of HIV infection</td>
<td>5</td>
</tr>
<tr>
<td>Immunizations</td>
<td>5</td>
</tr>
<tr>
<td>Care of infants born to HIV-positive women</td>
<td>6</td>
</tr>
<tr>
<td>Care of infants born to women considered at high risk of HIV infection but unknown HIV status</td>
<td>8</td>
</tr>
<tr>
<td>Specialized HIV care</td>
<td>12</td>
</tr>
<tr>
<td>Antiretroviral therapy for HIV-infected children</td>
<td>12</td>
</tr>
<tr>
<td>Indications for initiation of antiretroviral therapy in children</td>
<td>12</td>
</tr>
<tr>
<td>Initial therapy for HIV-infected children</td>
<td>14</td>
</tr>
<tr>
<td>Adverse drug effects</td>
<td>14</td>
</tr>
<tr>
<td>Changing antiretroviral therapy</td>
<td>15</td>
</tr>
<tr>
<td>Choosing a new antiretroviral regimen</td>
<td>16</td>
</tr>
<tr>
<td>Prophylactic therapy for opportunistic infections</td>
<td>17</td>
</tr>
<tr>
<td>Pneumocystis pneumonia (PCP)</td>
<td>17</td>
</tr>
<tr>
<td>Table 1: Schedule of Care for Infants Born to HIV Positive Mothers</td>
<td>11</td>
</tr>
<tr>
<td>Table 2: Schedule of Care for HIV-Infected Infants and Children</td>
<td>18</td>
</tr>
<tr>
<td>Table 3: Immunological Categories for HIV-Infected Children by Age-Specific CD4 Count (cells/mm3) and CD4 percentage</td>
<td>19</td>
</tr>
</tbody>
</table>
INTRODUCTION

The purpose of these guidelines is to describe the role of community pediatricians and family practitioners in the care they can offer to children who are HIV infected and to infants born to HIV infected mothers. The management of HIV disease in children is a shared responsibility of community physicians to provide primary care and pediatric HIV specialists to provide the HIV therapy and care of opportunistic infections.

COMMUNITY PHYSICIAN CARE

The community pediatricians and family practitioners provide the primary health care in the communities where the patients reside and will include:

- the care of infants born to HIV infected mothers or women at high risk for HIV infection, and
- the care of HIV infected children in the community will include:
  1. Identify the children at risk for HIV disease
  2. Confirm HIV status as early as possible
  3. Refer the infected child for specialized HIV care and treatment
  4. Monitor the child’s growth and development
  5. Ensure immunizations are given according to the routine recommended schedule
  6. Provide psychosocial support to the family as required
  7. Actively look for and treat minor infections early
  8. Identify HIV complications and opportunistic infections and refer to specialized pediatric HIV care
  9. Communicate with the pediatric HIV specialists to optimize joint care
IDENTIFY CHILDREN AT RISK FOR HIV DISEASE

1. Children born to newly diagnosed HIV infected women
2. Immigrant children from high HIV endemic areas
3. Recent HIV diagnosis in family member
4. Street involved children/adolescents
5. Children/adolescents with risk behavior – IDU, unprotected vaginal or anal sex with high risk partner, anonymous unprotected sex
6. Recent episode sexually transmitted disease
7. Mild symptoms with 2 or more of lymphadenopathy (> 2 sites), hepatomegaly, splenomegaly, dermatitis, parotitis, recurrent or persistent upper respiratory infection, sinusitis or otitis media
8. Symptomatic conditions that may be attributed to HIV – myelosuppression, cardiomyopathy, recurrent or chronic diarrhea, hepatitis, nephropathy, fever > 30 days
9. Recent opportunistic infection – persistent thrush or esophageal candidiasis, disseminated or severe fungal disease, recurrent or persistent herpes simplex, herpes zoster, disseminated varicella, cytomegalovirus disease, recurrent or multiple serious bacterial infections, disseminated or extrapulmonary tuberculosis, pneumocystis, toxoplasmosis of the brain,
10. Wasting syndrome in absence of concurrent illness plus chronic diarrhea or fever > 30 days
11. Progressive encephalopathy for at least 2 months in absence of concurrent illness:
   • failure to attain or loss of developmental milestones
   • impaired brain growth or acquired microcephaly
   • acquired symmetric motor deficit – paresis, ataxia or gait disturbance
10. Lymphoma or Kaposi’s sarcoma
DIAGNOSIS OF HIV INFECTION

Maternal HIV IgG antibodies detected by the EIA assay persist in the infant up to 12-18 months of age

- Infants < 18 months – virologic assays
  - DNA PCR - detects proviral DNA sequences in PBMCs
  - > 90% sensitive by age 2-4 weeks
  - method used by BCCDC for infant diagnosis
  - RNA PCR - detects extracellular viral RNA in plasma
  - > 90% sensitive by age 2-3 months
  - method used for viral load determination
- Children > 18 months – EIA antibody assay

IMMUNIZATIONS

All HIV infected and HIV exposed infants and children should receive the routine immunizations:

- Pentavalent at 2, 4, 6 and 18 months
- Hepatitis B at 2, 4 and 6 months or 0, 1 and 6 months
- Meningococcal C conjugate at 2 and 12 months
- Pneumococcal conjugate at 2, 4 and 12 months
- Measles, Mumps and Rubella at 12 and 18 months (unless HIV infected child severely immunosuppressed – see Table 3)
- Varicella at 12 months (unless HIV infected child severely immunosuppressed – see Table 3)
- Quadrivalent at 4-6 years
- Influenza yearly for children > 6 months of age and all household members
CARE OF INFANTS BORN TO HIV-POSITIVE WOMEN

Oak Tree Clinic personnel (604-875-2212) are available to provide telephone advice regarding any HIV-positive pregnant woman in BC. After 1630 hours, and on weekends, contact Children’s and Women’s Hospital (604-875-2161) and ask for the perinatologist on call for obstetric issues and pediatric infectious diseases for pediatric issues.

The perinatal kits containing the antiretroviral therapy and administration guidelines are available in all sites with > 250 deliveries per year.

Complete guidelines also available at: www.oaktreeclinic.bc.ca

1. Ensure that maximal confidentiality of maternal HIV status is maintained and obtain verbal consent.

2. Universal Precautions: Ensure that universal blood and body fluid precautions are observed, see infection control manual. No additional precautions are required.

3. Wash infant with soap and water to remove maternal blood or amniotic fluid prior to intramuscular injections or blood sampling.

4. Breast-feeding is NOT recommended irrespective of maternal antiretroviral therapy (ART).

5. Check maternal hepatitis B status. Give hepatitis B immune globulin and vaccine if mother is antigen positive. Consider hepatitis B vaccine for all infants.

6. Offer antiretroviral treatment to the infant, whether or not the mother received ART at delivery.

7. Zidovudine (ZDV) (also known as AZT).
   - Oral therapy is preferred but IV route may be used if infant unable to tolerate oral feeds.
   - Begin therapy within 8-12 hours of delivery if mother received Zidovudine at delivery.
   - If mother did not receive therapy at delivery start neonatal ZDV as soon as possible after delivery. If more than 72 hours have elapsed since delivery, consult Oak Tree Clinic.
   - Zidovudine (ZDV) dosage:
     - Infant ≥ 35 weeks: ZDV syrup 2 mg/kg/dose PO q6h for 6 weeks. Intravenous ZDV 1.5 mg/kg/dose q6h for 6 weeks may be used if infant unable to tolerate oral feeds.
- Preterm infant 30-34 weeks gestation dose reduced to 2 mg/kg/dose PO q12h for 2 weeks then q8h until 6 weeks. Intravenous ZDV 1.5 mg/kg/dose q12h for 2 weeks then q8h until 6 weeks may be used if the infant cannot tolerate oral feeds.
- Preterm infant < 30 weeks dose reduced to 2 mg/kg PO q12h for 4 weeks then q8h until 6 weeks. Intravenous ZDV 1.5 mg/kg/dose q12h for 4 weeks then q8h until 6 weeks may be used if the infant cannot tolerate oral feeds.

8. Oral nevirapine liquid (no IV formulation is available)
   - If mother is on antiretrovirals AND the most recent viral load < 1000 copies/mL: Infant does NOT require nevirapine.
   - If mother has not received antiretrovirals antenatally/intrapartum OR
   - If mother has received antiretrovirals but has most recent viral load > 1000 copies/mL:
     - Give infant nevirapine 2 mg/kg/dose x 1 dose as soon as possible. Nevirapine should be started within 72 hours of delivery.

9. Testing and follow up
   - CBC, differential count, AST, ALT, bilirubin. If hospital stay is more than 1 week, repeat CBC and transaminases weekly.
   - HIV Testing: HIV DNA PCR – see schedule on Table 1
     - Requires 2 mL venous blood in EDTA (lavender top) tube.
     - Using PHSA Laboratory serology requisitions, request infant HIV PCR under “other tests” on form.
     - Ensure arrival of sample at PHSA lab within 96 hours of acquiring specimen.
     - Specimen should not be frozen.
   - Before discharge, review dosing and administration of Zidovudine with the parent/guardian.
     - Ensure that the remainder of the Zidovudine bottle and appropriate oral syringes are supplied to the parent/guardian on discharge to treat the infant for 6 weeks.
   - Contact Oak Tree Clinic and follow up visits should be scheduled according to Table 1

10. All infants born to HIV-positive women or high-risk women should be discussed with the physicians/pharmacists at the Oak Tree Clinic (604-875-2212). If any questions/problems after 1630 hours on weekdays, or on weekends, call the BC Children’s Hospital Pediatric Infectious Disease consultant on call at 604-875-2161.

Complete Guidelines for delivery and newborn available at: www.oaktreeclinic.bc.ca
CARE OF INFANTS BORN TO WOMEN CONSIDERED AT HIGH RISK OF HIV INFECTION BUT UNKNOWN HIV STATUS

Antiretroviral therapy should be considered if mother:

- Self identifies as being high risk for HIV infection
- Has not received antenatal care
- Has a history of using injection drugs with needle sharing,
- Has a sexual partner known to be HIV positive or involved in high risk activities

Oak Tree Clinic personnel (604-875-2212) are available to provide telephone advice regarding any HIV positive pregnant woman in BC. After 1630 hours, and on weekends, contact Children’s and Women’s Hospital (604-875-2161) and ask for the perinatologist on call for obstetric issues and pediatric infectious diseases for pediatric issues.

The perinatal kits containing the antiretroviral therapy and administration guidelines are available in all sites with > 250 deliveries per year.

Complete guidelines also available at: www.oaktreeclinic.bc.ca

1. Ensure that maximal confidentiality of maternal HIV status is maintained and obtain verbal consent.

2. Universal Precautions: Ensure that universal blood and body fluid precautions are observed. See infection control manual. No additional precautions are required.

3. Wash infant with soap and water to remove maternal blood or amniotic fluid prior to intramuscular injections or blood sampling.

4. Breast-feeding is not recommended until the HIV status of the mother has been established.

5. Check maternal hepatitis B status. Give Hepatitis B immune globulin and vaccine if mother is antigen positive. Consider Hepatitis B vaccine for all infants.

6. Offer antiretroviral treatment to the infant, whether or not the mother received ART at delivery.
7. Zidovudine (ZDV) for infant.
   - Oral therapy is preferred but IV route may be used if infant unable to tolerate oral feeds.
   - Begin therapy within 8-12 hours of delivery if mother received ZDV at delivery.
   - If mother did not receive therapy at delivery start neonatal ZDV as soon as possible after delivery. If more than 72 hours have elapsed since delivery, consult Oak Tree Clinic.
   - Zidovudine (ZDV) dosage:
     - Infant ≥ 35 weeks: ZDV syrup 2 mg/kg/dose PO q6h for 6 weeks. Intravenous ZDV 1.5 mg/kg/dose q6h for 6 weeks may be used if infant unable to tolerate oral feeds.
     - Preterm infant 30-34 weeks gestation ZDV dose reduced to 2 mg/kg/dose PO q12h for 2 weeks then q8h until 6 weeks. Intravenous ZDV 1.5 mg/kg/dose q12h for 2 weeks then q8h until 6 weeks may be used if the infant cannot tolerate oral feeds.
     - Preterm infant < 30 weeks ZDV dose reduced to 2 mg/kg PO q12h for 4 weeks then q8h until 6 weeks. Intravenous ZDV 1.5 mg/kg/dose q12h for 4 weeks then q8h until 6 weeks may be used if the infant cannot tolerate oral feeds.

8. Nevirapine for infant (no iv formulation is available)
   - Give infant oral nevirapine 2 mg/kg/dose x 1 dose as soon as possible after delivery.
   - Nevirapine should be started within 72 hours of delivery.

9. HIV testing:
   - Send maternal HIV EIA and HIV DNA PCR to PHSA Laboratory. (The maternal HIV PCR allows for detection of recently acquired maternal HIV infection reducing the "window period")
   - Infant testing ONLY if mother is not available – send HIV DNA PCR and HIV EIA (Antibody) to PHSA Laboratory
     - Requires 2 mL venous blood in EDTA (lavender top) tube.
     - Using PHSA Laboratory serology requisitions, request infant HIV PCR under "other tests" on form.
     - Ensure arrival of sample at PHSA lab within 96 hours of acquiring specimen.
     - Specimen should not be frozen.
   - CBC and transaminases done only if infant will remain on therapy after discharge.
10. Follow up management
   - Discontinue Zidovudine therapy if maternal HIV PCR is negative or if infant HIV PCR and HIV antibody test is negative.
   - No follow up blood work is required if these results are negative.
   - Continue Zidovudine therapy if any maternal or infant test is positive. Contact Oak Tree Clinic and follow up visits should be scheduled according to Table 1.

11. All infants born to high risk women should be discussed with the physicians/pharmacists at the Oak Tree Clinic 604-875-2212. If any questions/problems after 1630 hours on weekdays, or on weekends, call the BC Children’s Hospital Pediatric Infectious Disease consultant on call [604-875-2161].

   Complete Guidelines for delivery and newborn available at: [www.oaktreeclinic.bc.ca](http://www.oaktreeclinic.bc.ca)
### Table 1: Schedule of Care for Infants born to HIV Positive Mothers

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Age (months)</th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th>yearly</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>NB</td>
<td>2-3w</td>
<td>4-6w</td>
<td>2-4m</td>
<td>6m</td>
<td>9m</td>
<td>12-18m</td>
<td></td>
</tr>
<tr>
<td>Examination</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td>CBC</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>HIV antibody</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>HIV-DNA-PCR(1)</td>
<td>(X)</td>
<td>X</td>
<td>X</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hepatitis B serology(2)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Hepatitis C serology(3)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Hepatitis C PCR(2)</td>
<td>X</td>
<td></td>
<td></td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td>Syphilis serology(4)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Toxoplasma serology(4)</td>
<td>X</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**NOTE:**
1. HIV DNA PCR should be done at birth if mother has detectable HIV viral load at delivery.
2. Hepatitis B serology – include anti-HBs and HBsAg at least 3 months after completion of vaccination series.
3. If mother’s Hepatitis C status unknown, Hepatitis C serology – antibody at birth. If maternal or infant antibody positive, HCV PCR at 2 months of age. Repeat antibody at 18 months if PCR tests negative.
4. Syphilis and toxoplasmosis antibody tests done if mother serology unknown.
SPECIALIZED HIV CARE

In BC, the pediatric HIV tertiary care facility for children is situated at the Oak Tree Clinic at Children’s and Women’s Health Centre of BC in Vancouver. The facility is a family centered care centre providing HIV care and treatment to children, pregnant women, women and their partners living in BC. The medical team includes physicians with infectious disease training in pediatrics, internal medicine and gynecology, nurses, pharmacists, dietitian, social worker, outreach workers and mental health physicians.

ANTIRETROVIRAL THERAPY FOR HIV-INFECTED CHILDREN

Combination highly active antiretroviral therapy is a standard part of the management of HIV disease in infants and children.

Reference: Guidelines for the use of antiretroviral agents in pediatric HIV infection – consensus statement is available at www.aidsinfo.nih.gov

Therapy will be available for requests done in consultation with a pediatric consultant experienced in HIV disease at Oak Tree Clinic, phone (604) 875-2212.

INDICATIONS FOR INITIATION OF ANTIRETROVIRAL THERAPY IN CHILDREN

< 12 months – treat all infants regardless of clinical symptoms, immune status or viral load

1 to < 5 years – treat all with AIDS or significant HIV related symptoms treat all with CD4 < 25% regardless of symptoms or viral load consider treatment for asymptomatic or with mild symptoms AND CD4 > 25% AND viral load > 100,000

> 5 years – treat all with AIDS or significant HIV related symptoms treat all with CD4 < 350 consider treatment asymptomatic or mild symptoms AND CD4 > 350 AND viral load > 100,000

Prior to starting therapy the following issues need to be addressed:

- Ability of patient and caregiver to adhere to therapy regimen.
- Consider formulation of drug that will be tolerated. Liquid formulations exist for some NRTIs (zidovudine, abacavir, lamivudine), NNRTIs (nevirapine, abacavir) and PIs (Lopinavir/ritonavir).
- Consider age of patient and time of drug dosing to fit with activity and feeding schedule.
- Obtain genotype resistance pattern of virus before therapy.
- Obtain HLA B5701 genotype for abacavir hypersensitivity screening.
- Baseline monitoring as shown in Table 2.
INITIAL THERAPY FOR HIV-INFECTED CHILDREN

Highly active antiretroviral therapy or HAART is prescribed as a combination of at least 3 drugs of at least 2 different classes – two nucleoside reverse transcriptase inhibitor (NRTI) and either a protease inhibitor (PI) or a non-nucleoside reverse transcriptase inhibitor (NNRTI).

- NNRTI based regimen
  - children > 3 years of age: Two NRTI plus Efavirenz
  - children < 3 years of age or children unable to swallow capsules: Two NRTI plus Nevirapine
- PI based regimen – Two NRTI plus Lopinavir/ritonavir
  PI alternative use:
  - fosamprenavir plus low dose ritonavir in children > 6 years
  - atazanavir plus low dose ritonavir in post puberty adolescents nelfinavir may be used in special circumstances
- NRTI backbone options combinations:
  - Abacavir plus lamivudine or emtricitabine (preferred)
  - Zidovudine plus lamivudine
  - Didanosine plus lamivudine
  - Tenofovir plus lamivudine in post puberty adolescents
  - Zidovudine + abacavir, zidovudine + didanosine, stavudine + lamivudine may be used in special circumstances
  - Give abacavir only if HLAB5701 negative

ADVERSE DRUG EFFECTS

Types of adverse drug effects include:

- Hematological – associated with bone marrow suppression, most common with Zidovudine. These effects can be exacerbated with TMP-SMX. Increased MCV and platelet levels are common in children on zidovudine.
- Mitochondrial dysfunction- including lactic acidosis, hepatic toxicity, pancreatitis and peripheral neuropathy, primarily seen with NRTI drugs.
- Lipodystrophy and metabolic abnormalities – including fat maldistribution and body changes, hyperlipidemia, insulin resistance and diabetes mellitus, osteopenia, osteoporosis and osteonecrosis – primarily seen with Stavudine and PI drugs and to a lesser extent with other NRTI drugs.
• Allergic reactions such as skin rashes and hypersensitivity reactions – more common with NNRTI drugs and certain NRTI drugs like abacavir.

• Detailed information about specific adverse reactions and management available at www.aidsinfo.nih.gov.

Toxicity or intolerance to the current regimen.

• If severe or life threatening toxicity - discontinue all drugs and resume after symptoms resolved with substitution of another drug for the responsible drug.

• If toxicity is moderate – continue therapy and substitute offending drug.

• If toxicity is mild – continue therapy and substitution may not be necessary.

• Dose reduction is never recommended as it leads to emergence of resistance. It is rarely done in special circumstances when therapeutic drug monitoring has been performed.

• Single drug substitution is permissible in toxicity or intolerance.

CHANGING ANTIRETROVIRAL THERAPY

Failure of current therapy with evidence of disease progression based on either clinical, virologic or immunologic parameters:

a) Clinical parameters:
   1. progressive neurodevelopmental deterioration
   2. growth failure (decline in weight-growth velocity despite adequate nutrition)
   3. severe or recurrent infection (AIDS defining condition or other serious infection)

b) Virologic parameters:
   1. Incomplete viral response to therapy
      - poor response after 8-12 weeks of therapy (sustained decrease of at least 1 log viral load from baseline) or viral load not suppressed to undetectable levels after 6 months of therapy
   2. Viral rebound
      - repeated detection of viral load after being undetectable or increase in viral load after initial response (> 0.5 log increase for children > 2 years or > 0.7 log increase if < 2 years of age)
c) Immunologic parameters:

1. Incomplete immunologic response to therapy:
   - failure to improve CD4% by 5% above baseline
   - failure to increase CD4 count by at least 50 cells/mm$^3$ above baseline in first year of therapy

2. Immunologic decline:
   - persistent decrease of 5% in CD4% or CD4 count below pre-therapy baseline

CHOOSING A NEW ANTIRETROVIRAL REGIMEN

- Genotype resistance testing and results of earlier resistance testing must be considered in choice of new regimen, as well as history of all ARTs taken in the past

- When changing therapy because of toxicity or intolerance, choose agents with different toxicity and side-effect profiles. With drug intolerance change of a single drug in a multi-drug regimen and dose reduction to lower end of therapeutic range are permissible. Intolerance in the distant past does not preclude rechallenging under control circumstances (except abacavir).

- When changing therapy because of treatment failure, adherence to therapy should be assessed as a possible cause of failure.

- If patient is adherent to drug regimen, assume drug resistance and change to regimen including at least two new active agents. The new regimen should include at least three drugs. Potential cross resistance between drugs should be considered. Future implications of a given change in therapy should be considered.
PROPHYLACTIC THERAPY FOR OPPORTUNISTIC INFECTIONS

PNEUMOCYSTIS PNEUMONIA (PCP)

Indications:
- all HIV infected infants from diagnosis until 12 months of age (regardless of CD4 count) starting at 4-6 weeks of age
- all HIV infected children with low age-adjusted CD4 count:
  - ≤500 cells/mm³ or ≤15% fraction for children 1 to 5 years of age
  - ≤200 cells/mm³ or ≤15% fraction for children > 6 years of age
- consider prophylaxis for any HIV infected child who has a rapid decline in CD4 count or has symptomatic HIV disease regardless of the CD4 count
- any child with a previous episode of PCP regardless of age or CD4 count

Regimens:
- Trimethoprim (TMP)-sulfamethoxazole (SMX) – Septra or Bactrim
  150 mg TMP/m²/day orally with 750 mg SMX/m²/day twice daily three days per week (consecutive). Max dose 320mg TMP and 1600mg SMX
- alternatives:
  1. Atovaquone
     - children 4-24 months at 45 mg/kg/day orally once daily with a meal
     - children > 24 months at 30 mg/kg/day orally once daily with a meal
  2. Dapsone (children aged > 1 mo) 2 mg/kg/day orally once daily (max dose100 mg)
  3. aerosolized pentamidine (children aged ≥ 5 yrs) 300 mg once monthly using Respirgard II inhaler

Some children will be allergic to sulfonamides. Because breakthrough infections are more common with alternative therapies, desensitization to TMP-SMX may be considered in some cases. Children should be referred to a pediatric centre if they are intolerant to TMP-SMX.

Full description of prevention and treatment of opportunistic infections is given at www.aidsinfo.nih.gov and should be discussed with pediatric infectious disease consultant.
Table 2: Schedule of Care for HIV-Infected Infants and Children

<table>
<thead>
<tr>
<th>Procedure</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Initial Work-up</td>
</tr>
<tr>
<td>Examination</td>
<td>X</td>
</tr>
<tr>
<td>Developmental assessment</td>
<td>X</td>
</tr>
<tr>
<td>PPD &amp; control anergy screen</td>
<td>X</td>
</tr>
<tr>
<td>CBC &amp; diff.</td>
<td>X</td>
</tr>
<tr>
<td>Renal &amp; liver fn²</td>
<td>X</td>
</tr>
<tr>
<td>Fasting lipids³/glucose</td>
<td>X</td>
</tr>
<tr>
<td>Urinalysis</td>
<td>X</td>
</tr>
<tr>
<td>CD4 count and %</td>
<td>X</td>
</tr>
<tr>
<td>HIV viral load</td>
<td>X</td>
</tr>
<tr>
<td>HLAB5701</td>
<td>X</td>
</tr>
<tr>
<td>HIV genotype</td>
<td>X</td>
</tr>
<tr>
<td>Chest x-ray</td>
<td>X</td>
</tr>
<tr>
<td>Other serology⁴</td>
<td>X</td>
</tr>
<tr>
<td>Ophthalmology⁵</td>
<td>X</td>
</tr>
<tr>
<td>Cardiology</td>
<td>X</td>
</tr>
<tr>
<td>Immunoglobulins</td>
<td>X</td>
</tr>
</tbody>
</table>

1. More frequent evaluations may be necessary in children with advanced immune disease.
2. Additional investigations while on antiretroviral therapy include creatinine kinase, uric acid, lactate and amylase. Include serum calcium, phosphate, and urine albumin/creatinine ratio if on Tenofovir.
3. Fasting lipids if on HAART and include triglycerides, cholesterol, HDL, LDL.
4. Other serology includes Epstein Barr virus, toxoplasmosis, cytomegalovirus, herpes simplex virus, varicella zoster virus, measles, mumps, and rubella. Hepatitis A,B,C as indicated.
5. CMV infected and severely immunosuppressed patients may require eye examination every 4 to 6 months.
Table 3: Immunological Categories for HIV-Infected Children by Age-Specific CD4 Count (cells/mm³) and CD4 percentage

<table>
<thead>
<tr>
<th>Immunologic Category</th>
<th>CD4 count By Age of Child</th>
<th>CD4%</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt; 12 months</td>
<td>1-5 years</td>
</tr>
<tr>
<td>No immune suppression</td>
<td>&gt; 1500</td>
<td>&gt; 1000</td>
</tr>
<tr>
<td>Moderate suppression</td>
<td>750 - 1500</td>
<td>500 - 1000</td>
</tr>
<tr>
<td>Severe suppression</td>
<td>&lt; 750</td>
<td>&lt; 500</td>
</tr>
</tbody>
</table>